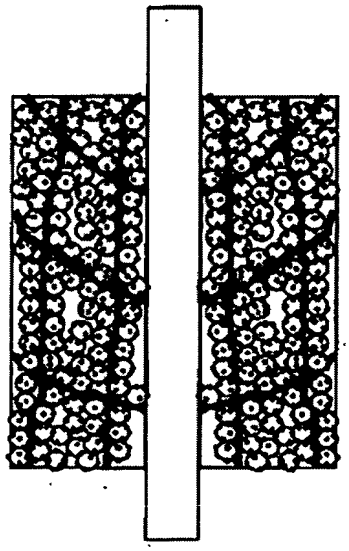
REMARKS/ARGUMENTS

Favorable reconsideration of the present application is respectfully requested. New claim 11 has been added. Basis for Claim 11 can be found at paragraph [0037] of the specification. Claims 6, 7 and 10-11 are pending the application.

The present specification describes a conventional fuel electrode/oxygen electrode formed by mixing a metal catalyst with an ion exchange resin solution to form a paste, which paste is applied onto the surface of the electrode structure. As is described in paragraph [0012], however, each of the platinum carrying carbon particles is thereby surrounded by the ion exchange resin, and is prevented from being in contact with the gas, which inhibits formation of a three phase boundary face.

As explained in the previous response, Claims 6, 7 and 10 are directed to a method of producing an electrode for fuel cells, including steps of establishing a water repellent finished state of an electrode structure which is electrically conductive and gas permeable, carrying a catalyst on the water repellent finished electrode structure, and applying ion exchange resin onto the catalyst carrying electrode structure. An embodiment of this is shown below:



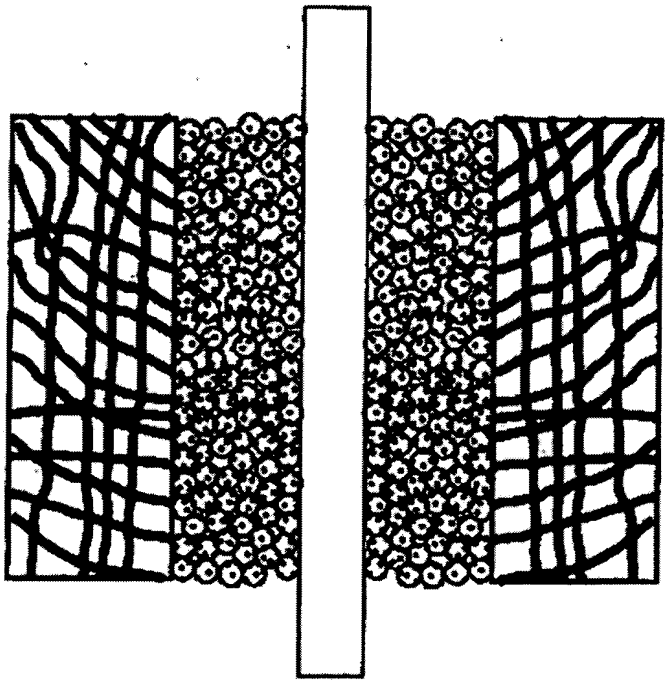
By carrying the catalyst on the electrode structure prior to applying the ion exchange resin, the ion exchange resin is prevented from entering between the catalyst and the current collector (paragraph [0014]). As a result, the catalyst directly contacts the electrode structure which acts as a current collector with that interposition of an ion exchange resin, whereby the catalyst more effectively contributes to the electrochemical reaction, which increases the catalyst utilization rate.

Claims 6 and 10 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. patent 3,297,484 (Niedrach). However, Applicant respectfully submits that the relevant portions of the method disclosed in Niedrach are similar to the prior art described in the present specification and that Niedrach fails to teach or suggest the claimed process whereby an ion exchange resin is applied onto an electrode structure which is already carrying a catalyst.

Niedrach describes a fuel cell comprising a matrix having an electrolyte sorbed therein, and cooperating with a pair of adjacent electrodes, each electrode comprised of a gas permeable, electrically conductive, hydrophobic body having at least one gas adsorbing metal embedded in PTFE (column 2, lines 54-63). Niedrach describes that the electrodes can be formed by mixing a finely divided catalyst powder with PTFE resin to obtain a uniform dispersion, which is then cast, dried and cut (column 3, line 60 through column 4, line 25). Alternatively, the electrode can be made by impregnating a fibrous cloth or mat with a mixture of PTFE and the metal powder (column 4, lines 28-35). Either process, however, comprises mixing the catalyst with the PTFE, thereby covering the catalyst particles, which inhibits the formation of a three phase boundary face, much in the same way as the prior art described in the present specification.

Accordingly, there is no description in Niedrach of the claimed step of carrying a catalyst on a water repellant finished electrode structure. Beyond this, Niedrach has no

disclosure of the claimed step of applying an ion exchange resin onto a catalyst carrying electrode structure in a method of producing an electrode for fuel cells. Applicant notes that Niedrach discusses the formation of ion exchange resins in a membrane or sheet form (e.g., at column 6, lines 12-14). However, these ion exchange resin sheets are used for producing the solid matrices (column 5, lines 21-23) which are sorbed with aqueous electrolyte and coupled with the already formed electrodes to form the fuel cells (column 1, lines 10-15; column 2, lines 57-61). This is shown schematically below:



Thus, the assembly of the electrodes with the ion exchange resin membrane is performed in assembling the electrodes within the fuel cell, not in producing the electrodes themselves. The Examiner's comment that "when the electrode is placed next to the ion exchange resin, then the recited last step in each of Claims 6 and 10 are met thereby" is thus not relevant to the claimed method of producing an electrode. Claims 6 and 10 therefore clearly define over this reference.

The above also applies to JP 07296818, which was also applied to reject Claims 6 and 10 under 35 U.S.C. § 102. According to JP '818, a fuel cell electrode is joined with a polymer solid electrolyte 4 by the penetration of the electrolyte into pores of an electrode layer 1 of PTFE and conductive particles. There is no description of a step of forming an electrode by carrying a catalyst on an electrode structure and applying ion exchange resin onto the catalyst carrying electrode structure. The penetration of the solid electrolyte 4 into the PTFE and conductive particle layer 1, which the Examiner noted in the Office Action, is not a part of the method for producing the electrode but is instead a part of the method for assembling the completed electrode with the electrolyte to form the fuel cell.

Claims 6, 7 and 10 were also rejected under 35 U.S.C. § 102 as being anticipated by JP-06020710. However, this reference also fails to teach or suggest the claimed invention. JP '710 discloses an electrode formed by covering the surface of a conductive and gas transmitting carbon cloth with a mixture consisting of carbon particles bearing electrode catalysts and a PTFE dispersed liquid. Thus, like the other references and the prior art mentioned in the present specification, it also forms the electrode by surrounding the catalyst particles in a matrix. Additionally, there is no description of applying an ion exchange resin onto the catalyst carrying electrode structure. Accordingly, the claims also clearly define over this reference.

New dependent claim 11 further recites that the water repellent finished state of the electrode is immersed in a solution including the catalyst in the carrying step of the catalyst. This is not taught by the cited prior art.

Applicant therefore believes that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

Respectfully submitted,

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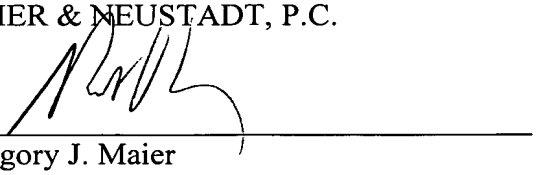

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